

Page 1

November 06, 2015 2:11:45 PM

Reference:

Approvals: Process Plan: SA Date: 151106 Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Draw Nbr	Revision Nbr
D3500	C

100

0.00

100

HAAS CNC VERTICAL MACHINING #1

HAAS 1

Memo

0.05

HAAS CNC vertical machine #1

Program Batch No. B3663 Double check by: gml 1-Machine Step No 1
per Folio FA641 and inspect per attached Dimension Sheets2-Machine Step
No 2 per Folio FA641and inspect per attached Dimension Sheets3-Machine
Step No 3 per Folio FA641 and inspect p

**DA
44
9-8**

110

QC2- Inspect parts off machine FAI/FAIB

0.00

110

QC

Memo

0.00

Quality Control

1207

QC8- Inspect parts - second check

0.00

120

OC

Memo

0.00

Quality Control

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Work Order ID 138663

November 06, 2015 2:11:46 PM

138663

Page 2

Item ID: D3500-1 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Saddle
 Start Date: 11/6/2015 Start Qty: 14.00 ***14*** Cust Item ID:
 Required Date: 11/27/2015 Req'd Qty: 14.00 ***14*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Chemical Conversion Coat per QSI005 4.1	0.00							
130	HandFinish	0.01							
Hand Finishing	Memo								
140	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum	0.00							
140	Powdercoat	0.01							
Powder Coating	Memo								
	START TIME: <u>11:30</u> OVEN TEMPERATURE: <u>1200</u>								
	FINISH TIME: <u>12:00</u>								
150	QC3- Inspect Part Finish	0.00							
150	QC	0.00							
Quality Control	Memo								

NOV 16 2015

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐		No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐					
				OTHER : ☐					

Work Order ID 138663***138663***

Page 3

November 06, 2015 2:11:46 PM

Item ID: D3500-1 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Saddle
Start Date: 11/6/2015 Start Qty: 14.00 ***14*** Cust Item ID:
Required Date: 11/27/2015 Req'd Qty: 14.00 ***14*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

160	Identify as per dwg & Stock Location: <u>ST 406</u>	0.00							
-----	---	------	--	--	--	--	--	--	--

160

Packaging

Memo

0.00

Packaging

170	QC21- Final Inspection - Work Order Release	0.00							
-----	---	------	--	--	--	--	--	--	--

170

QC

Memo

0.02

Quality Control

12x 8 15-11-18
15/11/19 JD
SA 120151118

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

Picklist Print

November 06, 2015 2:11:51 PM

Page 1

Work Order ID: 138663

138663

Parent Item: D3500-1

D3500-1

Parent Item Name: Saddle

Start Date: 11/6/2015

Required Date: 11/27/2015

Start Qty: 14.00

Required Qty: 14.00

Comments: IPP Rev:A New Issue 06-06-15 JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6102-013		Manufactured	No			100	Each	12.0000	1	14			

D6102-013

Saddle Billet

Location

Loc Qty

Loc Code

MAT040

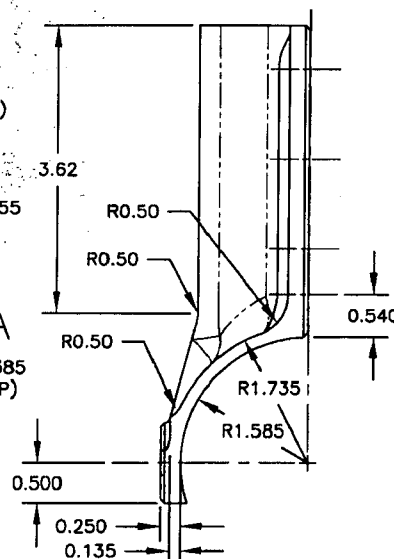
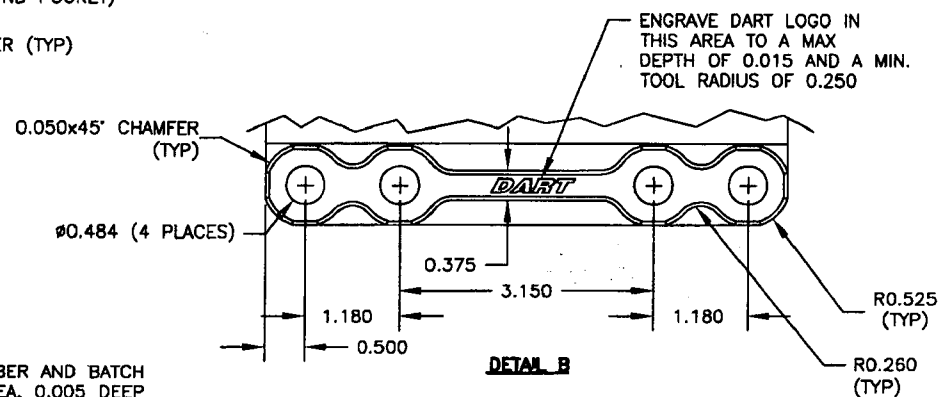
12

131195

12

only 15/11/12

12



- 1) MATERIAL: 6061-T6/T651 (QQ-A-200/B OR QQ-A-250/11)
(MAKE FROM D6102-013 SADDLE BILLET, 6061)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1,
POWDER COAT GLOSS WHITE (REF 4.3.5.1) PER
DART QSI 005 4.3
- 3) BREAK ALL SHARP EDGES 0.010 TO 0.020
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) ALL DIMENSIONS ARE IN INCHES

RELEASED

20151105

06.08.15 #1

5A 138663

C	06.06.30	MAT'L NOW 6061-T6/T651	
B	06.05.29	CHANGE DIMS; MAT'L NOW 7075-T7351	
A	06.04.18	NEW ISSUE	
DESIGN	92	DRAWN BY PH	REV.
			DART AEROSPACE LTD.
			WARRICKBURT, ONTARIO, CANADA
CHECKED	1	APPROVED	1
		DRAWING NO.	SHEET 1 OF
		D3500	SCALE
DATE	06.06.30	TITLE	2:
		SADDLE	

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DART AEROSPACE LTD.

DART AEROSPACE LTD		Work Order:	138663
Description: Saddle		Part Number:	D3500-1
Inspection Dwg: D3500	Rev: C	DSK:	Rev:
			Page 1 of 1

FIRST ARTICLE INSPECTION DIMENSION SHEET

Dim	Min	Max	Go/No Go Gauge	Record Actual Dimensions				
				1	2	3	4	5
A	0.483	0.490		.485	.485	.485	.485	.485
B	1.175	1.185		1.180	1.180	1.180	1.180	1.180
C	3.145	3.155		3.150	3.150	3.150	3.150	3.150
D	1.175	1.185		1.180	1.180	1.180	1.180	1.180
E	0.365	0.385		.375	.375	.375	.375	.375
F	0.490	0.510		.500	.500	.500	.500	.500
H	R0.515	R0.535		.525	.525	.525	.525	.525
(Note: Dimension I is 0.015" over flange)								
I	R1.575	R1.595		1.590	1.591	1.590	1.588	1.582
J	0.240	0.260		.251	.247	.251	.258	.251
K	0.490	0.510		.500	.500	.500	.500	.500
L	3.590	3.650		3.630	3.630	3.630	3.630	3.630
M	0.315	0.322		.316	.316	.316	.316	.316
N	0.256	0.262		.258	.258	.258	.258	.258
O	6.500	6.520		6.510	6.510	6.510	6.510	6.510
P	5.990	6.010		6.000	6.000	6.000	6.000	6.000
Q	2.820	2.830		2.825	2.825	2.825	2.825	2.825
R	2.495	2.505		2.500	2.500	2.500	2.500	2.500
S	2.245	2.255		2.250	2.250	2.250	2.250	2.250
T	1.120	1.130		1.125	1.125	1.125	1.125	1.125
U	0.540	0.560		.550	.550	.550	.550	.550
V	0.793	0.803		.798	.798	.798	.798	.798
W	R.240	R.260		.250	.250	.250	.250	.250
X	0.040	0.060		.050	.050	.050	.050	.050
Y	0.100	0.120		.110	.110	.110	.110	.110
AA	R1.125	R1.145		1.136	1.138	1.137	1.133	1.136
AB	R.490	R.510		.500	.500	.500	.500	.500
AC	0.615	0.635		.630	.630	.630	.630	.630
AD	0.240	0.260		.257	.250	.254	.254	.254
AE	1.810	1.830		1.826	1.820	1.823	1.820	1.820
AF	0.240	0.260		.255	.251	.253	.250	.250
AG	0.140	0.160		.158	.152	.153	.151	.151
AH	0.140	0.160		.154	.148	.152	.153	.153
AI	0.140	0.160		.156	.152	.156	.154	.155
Accept/Reject								

Measured by:	SL	Date:	15-11-12
Audited by:	A. A	Date:	15/11/16
Preliminary Approval:	9-6	Date:	

Rev	Date	Change	Revised by	Approved
A	06.09.26	New Issue	KJ/EC	
B	08.10.07	Dimension H removed	KJ/DD	
C	08.11.28	Dimension 'M' revised	KJ/EC	
D	11.01.17	Note added to Dim I	KJ	
E	15.02.26	Dimension H added	KJ	

DART AEROSPACE LTD		Work Order:	138663
Description: Saddle		Part Number:	D3500-1
Inspection Dwg: D3500 Rev: C DSK:		Rev:	Page 1 of 1

FIRST ARTICLE INSPECTION DIMENSION SHEET

Dim	Min	Max	Go/No Go Gauge	Record Actual Dimensions				
				#6	#7	#8	#9	#10
A	0.483	0.490		.485	.485	.485	.485	.485
B	1.175	1.185		1.180	1.180	1.180	1.180	1.180
C	3.145	3.155		3.150	3.150	3.150	3.150	3.150
D	1.175	1.185		1.180	1.180	1.180	1.180	1.180
E	0.365	0.385		.375	.375	.375	.375	.375
F	0.490	0.510		.500	.500	.500	.500	.500
H	R0.515	R0.535		.525	.525	.525	.525	.525
(Note: Dimension I is 0.015" over flange)								
I	R1.575	R1.595		1.587	1.585	1.590	1.5885	1.590
J	0.240	0.260		.250	.254	.251	.250	.251
K	0.490	0.510		.500	.500	.500	.500	.500
L	3.590	3.650		3.620	3.620	3.620	3.620	3.620
M	0.315	0.322		.316	.316	.316	.316	.316
N	0.256	0.262		.258	.258	.258	.258	.258
O	6.500	6.520		6.510	6.510	6.510	6.511	6.512
P	5.990	6.010		6.000	6.000	6.000	6.000	6.000
Q	2.820	2.830		2.825	2.825	2.825	2.825	2.825
R	2.495	2.505		2.500	2.500	2.500	2.500	2.500
S	2.245	2.255		2.250	2.250	2.250	2.250	2.250
T	1.120	1.130		1.125	1.125	1.125	1.125	1.125
U	0.540	0.560		.549	.549	.550	.549	.549
V	0.793	0.803		.798	.798	.798	.798	.798
W	R.240	R.260		.250	.250	.250	.250	.250
X	0.040	0.060		.050	.050	.050	.050	.050
Y	0.100	0.120		.110	.110	.110	.110	.110
AA	R1.125	R1.145		1.132	1.131	1.136	1.1345	1.135
AB	R.490	R.510		.500	.500	.500	.500	.500
AC	0.615	0.635		.630	.630	.630	.630	.630
AD	0.240	0.260		.253	.255	.255	.260	.255
AE	1.810	1.830		1.820	1.820	1.824	1.824	1.822
AF	0.240	0.260		.250	.250	.250	.255	.253
AG	0.140	0.160		.154	.152	.156	.156	.154
AH	0.140	0.160		.154	.149	.149	.146	.151
AI	0.140	0.160		.155	.151	.152	.148	.151
Accept/Reject				✓	✓	✓	✓	✓

Measured by:	CNR / BAC 15/11/13	Date:	15/11/12
Audited by:	A.A 08	Date:	15/11/16
Preliminary Approval:	9-8c	Date:	

Rev	Date	Change	Revised by	Approved
A	06.09.26	New Issue	KJ/EC	
B	08.10.07	Dimension H removed	KJ/DD	
C	08.11.28	Dimension 'M' revised	KJ/EC	
D	11.01.17	Note added to Dim I	KJ	
E	15.02.26	Dimension H added	KJ	AA

DART AEROSPACE LTD		Work Order:	138663
Description: Saddle		Part Number:	D3500-1
Inspection Dwg: D3500 Rev: C DSK: Rev:		Page 1 of 1	

FIRST ARTICLE INSPECTION DIMENSION SHEET

Dim	Min	Max	Go/No Go Gauge	Record Actual Dimensions				
				11	12	13	14	15
A	0.483	0.490		.485	.485			
B	1.175	1.185		1.180	1.180			
C	3.145	3.155		3.150	3.150			
D	1.175	1.185		1.180	1.180			
E	0.365	0.385		.375	.375			
F	0.490	0.510		.500	.500			
H	R0.515	R0.535		.525	.525			
(Note: Dimension I is 0.015" over flange)								
I	R1.575	R1.595		1.588	1.587			
J	0.240	0.260		.252	.253			
K	0.490	0.510		.500	.500			
L	3.590	3.650		3.620	3.620			
M	0.315	0.322		.316	.316			
N	0.256	0.262		.258	.258			
O	6.500	6.520		6.511	6.512			
P	5.990	6.010		5.998	6.001			
Q	2.820	2.830		2.825	2.825			
R	2.495	2.505		2.500	2.500			
S	2.245	2.255		2.250	2.250			
T	1.120	1.130		1.125	1.125			
U	0.540	0.560		.545	.550			
V	0.793	0.803		.798	.798			
W	R.240	R.260		.250	.250			
X	0.040	0.060		.050	.050			
Y	0.100	0.120		.110	.110			
AA	R1.125	R1.145		1.133	1.132			
AB	R.490	R.510		.500	.500			
AC	0.615	0.635		.630	.630			
AD	0.240	0.260		.256	.256			
AE	1.810	1.830		1.822	1.820			
AF	0.240	0.260		.251	.251			
AG	0.140	0.160		.153	.152			
AH	0.140	0.160		.149	.149			
AI	0.140	0.160		.154	.152			
Accept/Reject								

Measured by:	FK	Date:	15/11/13
Audited by:	B.A	Date:	15/11/16
Preliminary Approval:	9-82	Date:	

Rev	Date	Change	Revised by	Approved
A	06.09.26	New Issue	KJ/EC	
B	08.10.07	Dimension H removed	KJ/DD	
C	08.11.28	Dimension 'M' revised	KJ/EC	
D	11.01.17	Note added to Dim I	KJ	
E	15.02.26	Dimension H added	KJ	